Assessing the Effectiveness of New Virtual Reality Technology for Inducing Instability during Stance

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The Oculus Rift is new VR technology that is portable and inexpensive, but its usefulness for the study of balance has yet to be tested. The purpose of this research is to establish an affordable and portable Rift-based balance measuring "kit" that can be used in the field or clinic. The kinesiology students developed an algorithm to test the consistency and accuracy between force plates that will be included in the 'kit.' The results showed very little deviation between force plates when measuring the force of a 4.5 N object and that the force plate could reliably capture body sway. Simultaneously, 4 students developed the software for the Rift. To do so they connected the Rift with Unity, a gaming engine used to create the VR scene consisting of a city street with sidewalks and buildings that the subjects will enter. They further programmed the VR scene so that it will appear to the subject to translate back and forth in the fore-aft to disrupt balance. With hardware and software for the "kits" having been developed, pilot testing can begin to examine impact of visual movement produced through translation of the Rift VR scene on balance.

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